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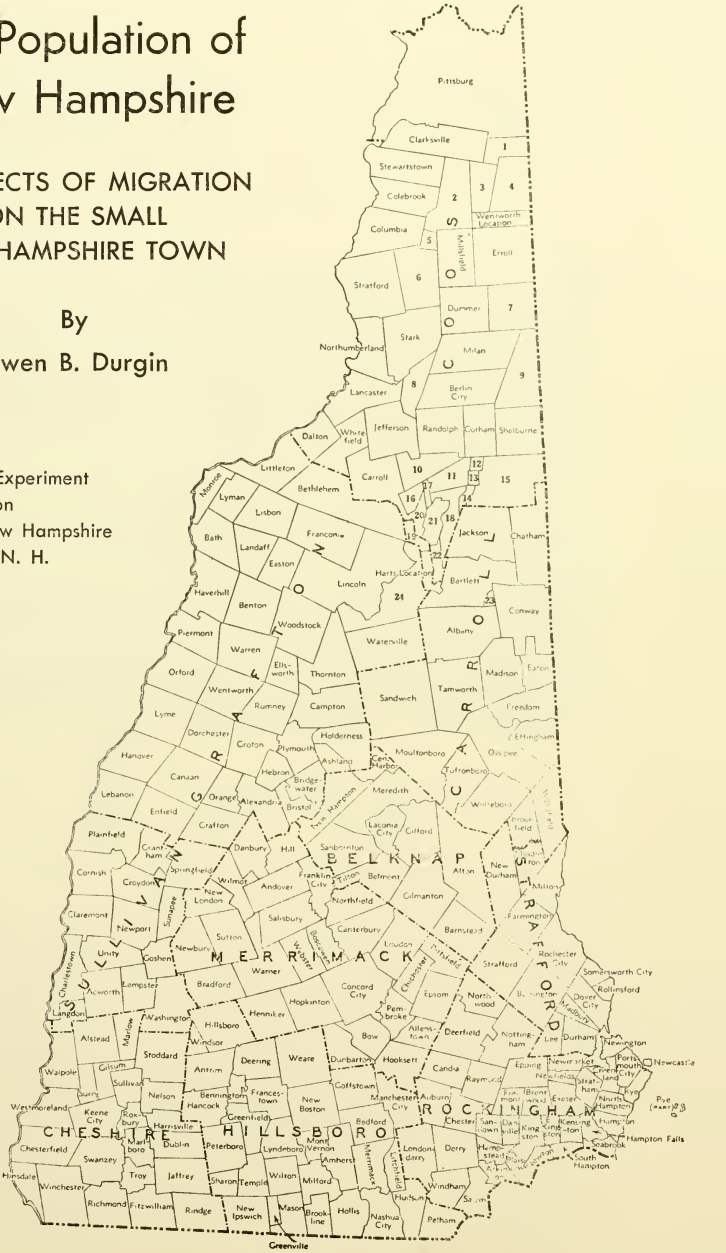

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This bulletin is one of a series on New Hampshire population characteristics and changes which are contributions to the North East Regional Population Research Project, N. E. 31. Dr. J. R. Bowring of the Department of Agricultural Economics initiated the work at this Station on population research and helped develop the research plan of which this bulletin is a part.

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The Population of New Hampshire

3. Effects of Migration on the Small New Hampshire Town

By Owen B. Durgin*

MOST of the studies of migration in the United States have been of the net movement of people from region to region within the country largely because only data of this type have been available. Most of the emphasis has been on the westward and urban trend.

Recognized by most students of population, but not stressed in research because of paucity of data, is the "milling" of people within a local area. It is quite possible that areas showing little net migration may have quite mobile population. Estimates of within-county movement of people in New Hampshire based on the 1950 census indicate that from 8 to 11 percent of the residents of a county move within that county during a 12-month period. Net migration for the period 1940-1950 in New Hampshire was less than 1 percent.

This indicated possibly that the level of resources with respect to current technology was such that population mobility was near some minimum. Under these conditions a substantial amount of the population movement might resemble "musical chairs". As some individuals in the local areas cease performing their normal functions they are replaced by others performing the same or similar duties. These are in turn replaced by others *ad infinitum*, maintaining a constant, although limited, state of mobility. The low net migration of the State of New Hampshire appears to qualify it as an area wherein a hypothesis of this nature might be investigated. To keep available resources at a low level, small towns were selected as the local unit with which to work.

If a number of towns having a population of about 500, some of which had increased in population over some period of time and some of which had decreased, could be compared as to population characteristics and economic adjustment, some insight into the validity of this hypothesis might be gained.

There has been an assumption by ecologists particularly and other social scientists generally that there must be some sort of balance between population and resources in a given area. The resources must include not only the primary physical resources, such as topography, climate, rainfall, soil types, and the like, but also the effect of these on power sources, transportation routes, type of agriculture, and other direct effects.

Migration is considered as one of the devices by which population and resources are brought into balance. If there were resources to be exploited at a given level of technology, population was attracted; if they had been exploited or technology changed, population was driven out. In considering *all* causes of migration, such a simple version is untenable, but this general concept of migration adjusting population to resources may be correct.

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If the resources are of such a nature that they require a particular segment of the population for their proper utilization, the excess number of people required over those supplied by natural increase must migrate in. At the same time any excess in age or sex categories other than those usable in the development of the resources should eventually migrate elsewhere to seek employment.

These conditions are imperfectly met in our culture. Unemployment compensation, old age security programs, rehabilitation and retraining programs, emergency crop loans, etc., act as factors deterring migration of some individuals whose current adjustment to local resources might lead to migration.

Company training programs, decentralization of industry, and an increasing military establishment induce the movement of dependents along with individuals who are adjusting to resources. It is suggested then that in local areas, where the resource potential is low, the effect of migration will be to make the population characteristics of towns more alike since a substantial part of the migration will involve persons other than the primary mover, the breadwinner.

This balance of people to resources will be dynamic rather than static. It may never be perfect since the utilization of resources will be dependent upon the current level of technology and cultural ideals. The change in these, if rapid enough, may prevent the development of a state of equilibrium.

It is the belief of the investigator that among integrated areas, except those possessing exploitable and easily exhaustible resources, a similarity of gross population characteristics will eventually develop.

The speed with which this similarity will develop will depend on two factors at least. If the exploitation of resources can continually expand either because of lack of limitation or change in technology, the development of population balance will be retarded. This condition will continually attract new migrants of age, sex, and marital status dictated by the nature of the resources. Once migration slows down or reverses, the speed of attaining population balance will depend upon the rate at which natural processes can compensate for differences created by migration.

Statement of Hypotheses

This general hypothesis of diminishing differences between areas gaining and losing population has been divided into three parts for purposes of testing.

1. During the time interval 1930-1950 the measured characteristics of population for two samples of towns, one sample of towns increasing and the other decreasing during this period, will become more alike.

2. By 1950 there will be an apparent contrast in the general economic structure of the towns gaining and those losing population.

3. By 1950 only minor differences will exist between the towns gaining and those losing population for economic factors analyzed. Such minor differences as do exist will be in favor of the increasing towns.

Probably the population similarity between the increasing and decreasing towns cannot be achieved quickly because of the relative slowness of population change once migration slows down. The degree of similarity will be affected by the relative values of the birth and death rates from period to period. The trend, however, from 1930-1950 will be toward greater similarity.

There has been a general assumption that economic structure affects population composition. The test of the belief that they are independent of one another is only possible in an area of long and stable settlement. It is known that areas possessing many new migrants differ in population composition from older settlements. Independence is testable only in areas where resource utilization is relatively stable.

If a general type of family structure is common within our culture, however, once migration slows down the composition of the populations of increasing and decreasing towns ought to become more alike despite differences in economic structure.

The fact that some towns are still increasing and others decreasing indicates that adjustment to resources is not perfect. It would then follow that the resources in the increasing towns will support more people while those in decreasing towns will support fewer. The values of economic factors ought then to be somewhat larger in the increasing towns. Since the migration is relatively light, these differences ought also to be minor.

This sort of analysis differs from the more usual treatment of the population in terms of rural farm, rural non-farm, and urban. This different treatment was used because of the belief that these census residential categories in New England have little meaning with respect to spatial characteristics. The Minor Civil Divisions of New England are likely to include elements of all these in varying proportions to one another. For this reason there is the possibility that conclusions drawn from population analysis based on census residential categories may be misleading when applied to New England towns.

Procedure

For a number of reasons it was evident that some sort of sampling procedure would have to be employed. First, the changes in population for all towns in the State, either increase or decrease, ranged from 0 percent to 50 percent. The bulk of the towns showed 0 percent to 8 percent change. Any attempt to dichotomize into "gainers" and "losers" then would include in each category a substantial number that were stable. Second, the time demands for the analysis of all the Minor Civil Divisions in New Hampshire (243) were impossible to meet with the research resources available. And third, it was desired to eliminate as far as possible the short term fluctuations which occur in the smaller towns when a single mill closes, then re-opens a year or so later. Such towns face a different kind of problem (that is, fluctuation of population) rather than general increase or decrease. There was the possibility that the characteristics of such a town might differ markedly from one which had a long history of steady increase or decrease.

Sample Selection

The first step in the selection of the sample was to set up criteria which would yield towns having different directions of population change and adjustment. The standards finally decided upon were:

1. Two sub-samples of 10 towns each, one being towns that had increased from 1920-1950; the other, towns that had decreased during the same period.

2. The increase or decrease should hold for each decennial period.

3. The net change through time should be substantial percentagewise as well as numerically.

4. The towns should have a population between 300 and 1,000 in 1950.

5. The total population of each sub-sample should be approximately equal to facilitate computation.

6. The towns, if possible, should not be concentrated in any one part of the State.

When the towns were actually selected it was found that all the criteria could not be met. Criteria 1, 3, 4, and 5 were met for each town in the sample. Number 2 could be met only for the sub-sample of increasing towns and number 6 could be met only approximately since the population shift in the State has in general been from North to South. As a result there are more of the decreasing towns in the northern half of the State

Table 1. Population of Towns Composing Increasing and Decreasing Samples

Towns	1920	1930	1940	1950	Change	Percent Change 1920-1950	Area of State
Increasing							
Chichester	507	567	587	735	228	45.0	SE
Croyden	230	269	312	349	119	51.7	SW
Deering	287	324	367	392	105	36.3	SW
East Kingston	384	347	424	449	65	16.9	SE
Fremont	519	571	634	698	179	34.5	SE
Hampton Falls	483	481	493	629	146	30.2	SE
Lee	475	376	481	575	100	21.0	SE
Newington	398	381	418	494	96	24.1	SE
South Hampton	230	261	294	314	84	36.5	SE
Stark	339	329	352	373	34	10.0	NW
	3852	3906	4362	5008			
Decreasing							
Columbia	601	524	483	495	106	17.6	NW
Grafton	554	539	552	442	112	20.2	WC
Hill	500	468	498	310	190	38.0	WC
Jackson	533	321	409	344	189	35.5	NE
Jefferson	960	771	763	728	232	24.2	NW
Landaff	510	469	389	342	168	32.9	WC
Newcastle	728	378	542	583	145	19.9	SE
Pittsburg	1311	671	820	697	614	46.8	N
Sandwich	1175	731	742	615	560	47.7	EC
Wilmot	536	495	466	370	166	31.0	WC
	7408	5367	5664	4926			

Source: United States Census, 14, 15, 16 and 17, Vol. 2, Characteristics of the Population.

and more of the increasing towns in the southern half. With respect to criterion 2, there were only three towns in the State within the population sizes stipulated that did not show some slight increase in one of the intercensal periods. Those towns with decreasing population were selected in which the increase in any one decennial period was least and in which net change 1920-1950 was greatest. See Table 1.

Population and Characteristics

The sample of increasing towns was compared with the sample of decreasing towns, using 1950 data, to see what differences in population characteristics, if any, existed following a 20-year history of increase or decrease respectively.

Age-Sex Distribution

A comparison of the 1950 age-sex distribution of the two sets of towns was made by use of the Chi Square technique.* It was recognized that as a measure this is relatively crude and that statistically it is not a unique measure. However, if the categories for each set of towns are identical, the fact that different values could be attained by different groupings of classes should not affect the validity of the relation between the two arrays.

One reason for using Chi Square is the fact that all the differences cumulate, hence it is impossible for differences which might vary in opposite directions to cancel one another. In this sense Chi Square becomes a conservative measure of the relationship between the two arrays.

Using the census age categories as they appear on the photostats of the Minor Civil Division count cards (0-5, 5-14, 15-20, 21-24, 25-34, 35-44, 45-54, 55-64, 65 and over) and further dividing the distribution by sex, the Chi Square value of the relationship between increasing and decreasing towns in 1950 was 5.42. The probability of getting a value greater than this with 17 degrees of freedom is in excess of 99 percent; that is, the two distributions are very much alike.

To test further the differences between specific age and sex groups, "t" scores were computed to test the significance of the difference between means of the same age-sex groups of the sub-samples.†

The highest value of "t" obtained in any of the 18 comparisons was 0.82, and the probability of getting a *difference* as great as that by chance with 9 degrees of freedom is 0.55. All other probabilities, hence, were much

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* Chi Square is based on the deviation of an observed frequency from a theoretical frequency. If this latter is derived from some hypothesis, the Chi Square directly measures the deviation of the sample around some theoretical population. In order to test the significance of a given value of Chi Square, it is necessary to know how often a Chi Square of the specified size would occur by chance in the long run. Published sampling distributions of Chi Square are used for this purpose, using the appropriate number of degrees of freedom.

† The "t" score is a statistic useful for comparing sample values when the number of cases in the samples is small. It permits direct comparison of two different values derived from two different samples, compensating at the same time for small sample size. To test the significance of "t", it is necessary to know how often a "t" of the specified size would occur by chance in the long run. Published sampling distributions of "t" are used for this purpose using the appropriate number of degrees of freedom. Frequently this is indicated by ($p = ...$) following the "t" value designating the probability of a value of "t" this large being obtained by chance.

higher. There is no significant difference in average numbers of individuals of given age or sex between the two samples. Since the total populations of the samples are equivalent, there is likewise no difference in proportions in each age group.

Table 2.

	Percent Rural Farm Population[1] to Total Population		Fertility Ratio 1950		Sex Ratio 1950	
	1930	1940	Farm	Non-Farm	Farm	Non-Farm
Increasing Towns						
Chichester	47.4	42.1	403	624	98.0	92.0
Croyden	54.6	45.2	560	436	108.1	85.7
Deering	68.5	53.1	620	476	142.3	105.0
East Kingston	32.6	46.7	609	436	107.4	89.0
Fremont	25.4	41.3	625	714	115.2	83.7
Hampton Falls	51.4	39.4	720	462	113.9	87.0
Lee	67.0	70.1	579	745	93.7	88.9
Newington	24.9	78.7	815	419	84.3	94.1
South Hampton	78.5	60.5	571	509	108.3	91.2
Stark	73.2	44.3	303	718	106.1	126.7
Decreasing Towns						
Columbia	71.2	74.5	719	778	109.2	146.5
Grafton	51.9	45.8	172	868	113.8	106.4
Hill	25.2	39.8	1143	458	118.2	97.0
Jackson	49.5	43.0	250	683	100.0	104.1
Jefferson	73.4	62.0	700	514	116.3	113.2
Landaff	50.1	50.1	421	710	95.6	118.9
Newcastle				565	50.0	91.1
Pittsburg	49.8	37.3	500	490	106.4	100.8
Sandwich	78.2	43.9	600	429	100.0	90.2
Wilmot	70.3	45.1	188	454	104.0	111.0

[1]15th, 16th United States Census, Vol. 2, Characteristics of Population.

Farm and Non-Farm

The samples were then divided into farm and non-farm residences retaining the same age and sex categories. The "t" tests were used again for each age and sex category. The highest value for "t" obtained was 1.21 ($p = 0.35$). In the sub-samples taken as a whole the numbers of non-farm and farm population show no differences. It was felt that in spite of the similarity in numbers, there might be the possibility that the *proportion* of non-farm males to total males might vary. Accordingly these were tested in similar fashion. The maximum "t" obtained was 1.81 ($p = 0.12$). The proportion of non-farm males to total males for all age categories then showed no significant difference. That category which did show a high value (1.81) was males 0-5 years old, reflecting probably the recent increase in fertility.

Change in Age Distribution, 1930-1950

The preceding tests demonstrate that there are no major differences between the two population distributions either grossly or by relatively small age and sex categories. The next question was whether this similarity in

1950 was accidental or if there had been some definite trend in this direction over time. It was possible to test this in two ways. Data were available only by age categories for the 1930 population, hence all analysis was limited to age categories rather than age-sex as in 1950. Chi Square was again used as a measure of the relationships between the increasing and decreasing towns for the periods 1930, 1940, and 1950. The values so obtained were 55.7, 18.1, and 5.73, respectively, indicating that the population distributions had been becoming more and more alike since 1930. If some fixed distribution could be established and the age distributions of the towns compared with this, such a measure might be more meaningful. In 1943 a set of life tables by states and regions was published by the Metropolitan Life Insurance Company for the National Office of Vital Statistics.* This included a life table for New Hampshire based on 1939-41 actuarial experience. This was revised to show the proportion that each age group was of the total population. Each of the distributions was compared against this standard. Table 3 shows the Chi Square values obtained.

Table 3. Chi Square Values of Sample Population Distributions Compared with Population Distribution from New Hampshire Life Table 1939-1941, Actuarial Experience

Year	Increasing Towns	Decreasing Towns	Difference
1930	72.9	158.2	85.3
1940	30.1	70.7	40.6
1950	145.6	154.5	8.9

The differences between these sets of values are, respectively, 85.3, 40.6, and 8.9. In a 20-year period the difference in Chi Square value has decreased almost 90 percent. The population distributions have become more alike.

Sex Ratio, 1940-1950

The sex ratio (number of males per 100 females) in 1940 of the sample of increasing towns was 99.8 and for the sample of decreasing towns 111.3 ($t = 2.50$; $p = .027$). In 1950 the ratios were 98.7 and 105, respectively, ($t = 1.22$; $p = .24$). The change in sex ratio during the decade 1940 to 1950 bears out the earlier data developed through the Chi Square test. The samples of towns are becoming more alike in population characteristics. See Table 4.

When the samples are divided into farm and non-farm components, the sex ratios of the increasing sample are 107.7 and 94.3, respectively, while the corresponding ratios for the decreasing towns are 101.4 farm and 107.9 non-farm. The value of "t" between the farm sex ratios is .81 ($p = .43$) and between the non-farm sex ratios 2.06 ($p = .055$).

Fertility Ratio, 1940-1950

The fertility ratio (children 0-5 per 1000 women 15-44) for 1940 and 1950 was computed for each town (see Table 4) and the average ratio for each set of towns computed. These were 554 for the increasing towns and 560 for the decreasing towns. The "t" test was applied to see if the difference in

* State and Regional Life Tables 1939-41, Metropolitan Life Insurance Company, National Office of Vital Statistics, Washington, D. C., 1948.

Table 4.

	Population Density			Dependency Ratio			Sex Ratio		Fertility Ratio	
	1930	1940	1950	1930	1940	1950	1940	1950	1940	1950
Increasing Towns										
Chichester	26.7	27.7	34.7	789	726	842	97.6	94.2	361	549
Croyden	7.2	8.3	9.3	650	686	907	110.8	95.0	345	484
Deering	10.2	11.6	12.4	770	799	1021	105.0	129.2	487	577
East Kingston	35.1	42.8	45.4	744	696	803	91.0	94.4	337	487
Fremont	33.2	36.9	40.6	913	838	1029	105.8	86.8	432	703
Hampton Falls	38.5	39.4	50.3	775	812	823	90.3	92.9	379	517
Lee	18.4	23.6	28.2	825	879	891	111.0	91.7	516	654
Newington	31.5	34.5	40.8	814	866	850	94.4	91.5	513	525
South Hampton	33.0	37.2	39.8	905	815	679	87.3	95.0	406	522
Stark	5.4	5.8	6.2	994	472	865	104.6	116.9	258	528
Average	23.9	26.8	30.8	818	759	871	99.8	98.8	403	555
Decreasing Towns										
Columbia	8.4	7.8	8.0	1023	809	1039	135.6	121.0	512	738
Grafton	12.6	12.9	10.3	859	846	982	114.8	109.5	412	567
Hill	17.5	18.6	11.6	753	811	856	113.7	100.0	385	545
Jackson	4.7	6.0	5.0	663	643	820	107.6	103.6	293	632
Jefferson	14.9	14.7	14.0	913	856	1039	114.9	114.7	325	607
Landaff	16.4	13.6	12.0	839	945	988	101.6	106.0	622	551
Newcastle	189.0	271.0	291.5	809	594	730	93.6	90.5	252	560
Pittsburg	2.3	2.8	2.3	939	843	920	116.9	102.6	393	493
Sandwich	7.8	7.9	6.5	805	754	804	100.0	92.8	382	469
Wilmot	17.0	16.0	12.7	1045	779	721	113.8	109.0	432	394
Average	29.1	37.0	37.0	865	788	895	111.3	105.0	401	556

Source: 15th, 16th, and 17th U. S. Census, Vol. 2, Characteristics of Population.

reproductive behavior was significant statistically. The value of "t" was .15 ($p = .87$) indicating no significance in the difference.

Farm — Non-farm Fertility

The populations were then divided into farm and non-farm components and the comparisons again made between the average fertility ratio of these segments of the population of the increasing and decreasing towns. The rates were found to be 530 and 521 for the farm populations ($t = .43$; $p = .64$) and 554 and 594 ($t = .63$; $p = .54$) for the non-farm populations, respectively.

On an unstandardized basis the non-farm population of the increasing towns is more prolific than the non-farm populations of the decreasing towns.* The farm population of the decreasing towns is more prolific than the farm population of the increasing towns. The differences are of approximately the same magnitude and explain the very slight differences noted when total populations are compared.

The important thing to be noted is that the populations are complementary in terms of their reproductive behavior. As far as population growth or decline of the area is concerned, the farm and non-farm subpopulations should be considered as a unit. Differences in age distribution of the female population of the farm and non-farm segments of the increasing and decreasing towns might be responsible for their reversal of reproductive behavior. The samples were divided accordingly and the average number of women 15-44 was compared using the "t" test. The differences were not significant. The differences in reproductive behavior apparently are due to social factors, not to an excess or deficiency of women in the reproductive years of life in either group.

The average fertility ratio in 1940 for the increasing towns was 403 and for the decreasing towns 401 ($t = .05$; $p = .93$). Since 1940 both sets of towns have followed the national trend in fertility, but the increasing towns increased their fertility rates more noticeably than the decreasing towns. Since we know that the age-sex composition of these sets of towns in 1950 is very much alike, it probably is necessary to attempt to explain this difference in rate of change in social terms. Previous studies have shown that the number of children per farm family bears an inverse relationship to income.† A recent study from North Dakota indicates that levels of living tend to rise in those counties experiencing greatest loss of population.‡ It may be that some such trend operates in New Hampshire and would explain the failure of the decreasing towns to increase their fertility rates at the same rate that the increasing towns were increasing theirs. See Table 2.

Dependency Ratio

One of the measures used extensively in inferring the relative burden of supporting social institutions is the dependency ratio. In this study the

* The similarity in number of females 15-44 was sufficiently close to make the work of equating to equal numbers of women unnecessary.

† Loomis, C. P. and Beegle, J. A., *Rural Social Systems*, pp. 100-105, Prentice Hall, New York, 1950.

‡ Anderson, A. H., "Changes in Farm Population and Rural Life in Four North Dakota Counties", A.E.S. Bull. 375, North Dakota Agricultural College, Fargo, N. D., April, 1952.

ratio was defined as the number of people under 15 and over 65 divided by the people 20-64, the product multiplied by 1000. It was possible to compute this statistic for 1930 as well as 1940 and 1950, yielding the results shown in Table 5.

Table 5. Abstract of Dependency Data from Table 4.

Year	Dependency Ratio Increasing Towns	Dependency Ratio Decreasing Towns	"t"
1930	818	865	.96
1940	759	788	.58
1950	871	895	.46

Again earlier data are borne out, that on gross population data the towns have been becoming more similar with respect to population characteristics. Both follow generally similar trends, yet approach one another at the same time.

It also seems to indicate, as do preceding population measures, that in New England population analysis is more meaningful by area than by residence category. In other parts of the United States having different patterns of land use it might not be as true.

Population Density

The fact that these small towns had not developed in size beyond their current population in spite of a long history of settlement suggests that the availability of resources is about the same in each sample; that some were being over-exploited, economically, while others were not exploited. If this were the case, then one should expect that the differences in average population density would decrease with time. In 1940 the population density (number of persons per square mile) of the decreasing towns ranged from 2.8 to 271.0 with the mean at 37.1. At the same time the density of the increasing towns varied from 5.8 to 42.8 with the mean at 26.8 ($t = .39$; $p = .70$).

By 1950 the corresponding population ranges and densities were 2.3 to 291.5 with the mean at 37.4 for the decreasing towns and 6.2 to 50.3, mean = 30.8, for the increasing towns ($t = .23$). During the period 1940-1950, the towns did become more alike in this respect. The population densities for 1930 and 1920 were computed and the results are summarized in Table 6.

It is apparent from Table 6 that the trend has been toward a minimizing of the *difference* in population density since 1920. This trend does not demonstrate the same consistency that some of the others do, but the direction of the trend is obvious.

Table 6. Average Population Density

Year	Increasing Towns	Decreasing Towns	Difference
1920	23.7	48.5	24.8
1930	23.9	29.1	5.2
1940	26.8	37.1	10.3
1950	37.4	30.8	6.6

Table 7. Net Population Change, 1940-1950, Attributable to Migration and Natural Increase

Towns	Population 1940	Population 1950	Increase or Decrease	Excess of Births Over Deaths	Change Attributable to Net Migration	Percent of Change Attributable to Natural Increase	Percent of Change Attributable to Net Migration
Increasing Towns							
Chichester	587	735	148	33	115	22.3	77.7
Croyden	312	349	37	15	22	40.5	59.5
Deering	367	392	25	13	12	52.0	48.0
East Kingston	424	449	25	27	— 2	108.0	— 8.0
Fremont	634	698	64	82	— 18	128.1	— 28.1
Hampton Falls	493	629	136	35	101	25.7	74.3
Lee	481	575	94	7	87	7.4	92.6
Newington	418	494	76	17	59	22.4	77.6
South Hampton	294	314	20	—12	32	— 60.0	160.0
Stark	352	373	21	3	18	14.3	85.7
Decreasing Towns							
Columbia	483	495	12	64	— 52	533.3	—433.3
Grafton	552	442	—110	15	—125	— 13.6	113.6
Hill	498	310	—188	1	—189	— .5	100.5
Jackson	409	344	— 65	30	— 95	— 46.2	146.2
Jefferson	763	728	— 35	64	— 99	—182.8	282.8
Landaff	389	342	— 47	5	— 52	— 10.6	110.6
Newcastle	542	583	41	58	— 17	141.5	— 41.5
Pittsburg	820	697	—123	94	—217	— 76.4	176.4
Sandwich	742	615	—127	25	—152	— 19.7	119.7
Wilmot	466	370	— 96	45	—141	— 46.9	146.9

Migration

One of the questions in which there was interest was whether the small increasing town was increasing because of influx of migrants or because the number of out-migrants was less than the natural increase. A second was to discover whether the decreasing small towns were decreasing because of out-migration or because of reduced fertility.

It was possible to answer this for the period 1940-1950. The births by place of residence were secured from the New Hampshire Office of Vital Statistics for the years 1941-50. Deaths by place of residence were not published for the years 1941-43, but were available for the period 1944-1950. The deaths by residence for these earlier years were estimated by taking the average deaths 1944-50 for each town and rounding off to the nearest whole number such that the sum of the deaths in 1941-42-43 most nearly equalled three times the mean number of deaths carried to one decimal place.

From a look at Table 7, it is immediately obvious that the reason for decrease during the period 1940-50 of the decreasing towns is out-migration while the reason for increase in the increasing towns, in 8 of the 10 cases, is due to in-migration. In two cases, E. Kingston and Fremont, the increase was due to net out-migration being less than natural increase.

Economic Orientation

To test the hypothesis that there will be a difference in the economic structure of the two sets of towns, some analysis of occupations and some evaluation of the nature and extent of non-agricultural employment had to be attempted. The data available for use in this analysis were meager and of doubtful validity.

From *The New Hampshire Register* for the years 1921, 1930, 1941, and 1950 the various types of industries, manufacturing establishments, stores, hotels, etc., were enumerated and classified as follows in Table 8.

Table 8. Number of Specified Non-Farm Establishments Listed in New Hampshire Register

Type of Establishment	1921		1930		1941		1950	
	Inc. Towns	Dec. Towns	Inc. Towns	Dec. Towns	Inc. Towns	Dec. Towns	Inc. Towns	Dec. Towns
Forestry Production						4		4
Non-Metallic Mining		1				4	2	3
Construction	31	26	48	43	26	27	27	34
Manufacturing	14	9	15	20	11	6	11	17
Transportation	1	8	4	18	18	18	23	23
Retail Trade (Staple)	24	27	28	36	21	25	19	28
(Non-Staple)	0	7	10	19	11	21	11	24
Business and Repair Service	15	25	17	9	2	1	9	4
Personal Service	11	31	11	37	10	36	19	66
Recreation		1		3		1		
Professional Service	4	7		7	4	10	3	5
Clergy	9	16	5	6	9	13	10	15
Agricultural Production (Warehousing, Marketing, etc.)	15		16	2	20	5	62	10

Source: *The New Hampshire Register,* Fred L. Tower Publishing Co., Portland, Maine, 1921, 1930, 1941, 1950.

It is impossible to determine from the *Register* the size of these establishments and the suspicion is that they range from one-man operations to organizations employing several hundred. As such they are simply indicators of the general type of employment in the different samples of towns. It is noteworthy that those establishments handling agricultural products are located in the increasing towns and have been increasing in number since 1921. While the number of manufacturing establishments has remained fairly constant in the sample of increasing towns, there has been wide fluctuation of this type of activity in the sample of decreasing towns. At the same time, the number of retail stores handling non-staple items increased markedly in the sample of decreasing towns with a concurrent increase in the number of personal service establishments in these same towns.

From these data, even making allowance for their limited information, it appears that the decreasing towns are those catering to the recreation industry, while these small increasing towns are more closely allied with agriculture.

In order to attempt the measurement of the relative weight of industry in the economy of these samples of towns, data relating to number of firms and total annual payrolls were secured from the New Hampshire Division of Employment Security.

These data do not include all possible industry, but only those employing five or more persons twenty or more weeks per year. The coverage is approximately 95 percent for manufacturers and between two-thirds and three-fourths of non-manufacturers. In order that no identification of specific

Table 9. Index of Industrial Activity

Firms Employing Five or More Persons Twenty or More Weeks Per Year 1949-1950				
Towns	All Industry	Manufacturing	Non-Manufacturing	Payroll Index
Increasing Towns				
Chichester	0	0	0	0
Croyden	0	0	0	0
Deering	1	1	0	12.5
East Kingston	4	2	2	5.0
Fremont	5	2	3	27.0
Hampton Falls	2	0	2	10.0
Lee	2	1	1	3.0
Newington	10	1	9	70.0
South Hampton	1	0	1	1.0
Stark	1	0	1	1.0
Decreasing Towns				
Columbia	0	0	0	0
Grafton	6	4	2	6.0
Hill	3	3	0	6.0
Jackson	11	0	11	9.0
Jefferson	5	1	4	10.5
Landaff	0	0	0	0
Newcastle	1	0	1	65.0
Pittsburg	12	4	8	50.0
Sandwich	6	3	3	5.0
Wilmot	1	0	1	1.0

Source: New Hampshire State Division of Employment Security.

firms be possible, the manufacturing and non-manufacturing payrolls were totalled and the results treated as an index. The average payroll per sample is the figure itself, but Table 9 is only a set of relative numbers. The numbers are proportional to the payroll data. Trend data were not available.

The results are in conformity with the hypothesis that the population balance will be independent of the economic base of the town. In 1950 the average number of both manufacturing and non-manufacturing establishments in the sample of increasing towns was 2.6; in the decreasing towns, 4.5. The average annual payroll in the sample of increasing towns is $118,250; in the decreasing towns, $152,500. However, since this payroll in the decreasing towns apparently stems from seasonal recreational employment, it undoubtedly represents payments to a substantial number of migrant or temporary workers. While the evidence is not conclusive, there appears to be some indication that the economic bases of the two samples are not identical, although there may be considerable overlap in the nature of their economic activity. The data on employment status in 1950 tends to support the belief that the two sets of towns have approached some sort of equilibrium which is reflected in the population characteristics.

These data indicate no significant difference in the percent employed, unemployed, and not in the labor force for either sex in the two samples. The slight differences which do exist are in favor of the sample of increasing towns.

Farm Size and Value

Since these are small towns in New Hampshire, it was assumed that agriculture would play an important economic role, and an important nondemographic variable was that of farm size and value. The period 1920-1950 has been characterized by a dollar whose value has fluctuated considerably and so all comparisons in which value of property plays a part have been made with dollars standardized with the General Wholesale Price Index, all commodities, 1926 = 100.

Since 1920 the average size of the farms in acres in the sample of increasing towns has decreased slightly although the trend is one of fluctuation rather than regular decrease. During the same period the average size of the farms in the sample of decreasing towns has increased with a fluctuating trend also. See Table 11.

The relationship between average number of acres has varied considerably. When the significance of the differences between these numbers is analyzed, however, the change in farm size does have a definite trend toward larger farms in the decreasing towns and small farms in the increasing towns.

Farm Numbers

The trend in farm numbers in both the increasing and decreasing towns was downward. However, the rates of decrease were different for the two samples. The average percent changes between 1920-1945 in number of farms in the increasing towns was —14.9, while in the decreasing towns it was —41.5. When the significance of the difference between average numbers of farms in the increasing and decreasing towns is computed for each period 1920-1945, the trend indicates that the difference in farm numbers is decreasing. See Table 12.

Obviously the trend over time is for the differences in numbers of farms to approach some sort of minimum. It would be expected in line with na-

Table 10. Employment Status: Number and Percent of Persons, 14 Years of Age and Over, Who are Employed, Unemployed, and Not in the Labor Force — 1950

Towns	Population	Total Labor Force	Employed M.	Employed F.	Percent Employed M.	Percent Employed F.	Unemployed M.	Unemployed F.	Percent Unemployed M.	Percent Unemployed F.	Not in Labor Force M.	Not in Labor Force F.	Percent Not in Labor Force M.	Percent Not in Labor Force F.
Increasing Towns														
Chichester	735	562	221	96	39.3	17.1	9	5	1.6	.9	45	186	8.0	33.1
Croyden	349	256	96	30	37.5	11.7	10	2	3.9	.8	21	97	8.2	37.9
Deering	392	282	101	29	35.8	10.3	18	2	6.4	.7	38	94	13.5	33.3
East Kingston	449	349	130	42	37.2	12.0	2	1	.6	.3	37	137	10.6	39.3
Fremont	698	473	179	57	37.8	12.1	6	2	1.3	.4	47	182	9.9	38.5
Hampton Falls	629	491	174	40	35.4	8.2	6	3	1.2	.6	59	209	12.0	42.6
Lee	575	401	161	47	40.2	11.7	9	0	2.2	.0	42	142	10.5	35.4
Newington	494	360	121	34	33.6	9.4	13	2	3.6	.6	42	148	11.7	41.1
South Hampton	314	241	87	29	36.1	12.0	4	2	1.7	.8	24	95	10.0	39.4
Stark	373	266	98	23	36.8	8.6	5	0	1.9	.0	43	97	16.2	36.5
Total		3681	1368	427			82	19			398	1387		
Percent		100	37	11			02	01			11	38		
Decreasing Towns														
Columbia	495	320	143	11	44.7	3.5	2	1	.6	.3	41	122	12.8	38.1
Grafton	442	332	88	5	26.5	1.5	3	0	.9	.0	88	148	26.5	44.6
Hill	310	230	72	30	31.3	13.0	10	4	4.4	1.7	29	85	12.6	37.0
Jackson	344	256	101	48	39.4	18.8	11	2	4.3	.8	10	84	3.9	32.8
Jefferson	728	520	185	34	35.6	6.6	37	9	7.1	1.7	51	204	9.8	39.2
Landaff	342	229	85	24	37.1	10.5	7	1	3.1	.4	23	89	10.0	38.9
Newcastle	583	430	121	43	28.2	10.0	13	4	3.0	.9	62	187	14.4	43.5
Pittsburg	697	490	173	40	35.3	8.3	31	0	6.3	.0	54	192	11.0	39.2
Sandwich	615	475	177	43	37.3	9.1	11	2	2.3	.4	48	194	10.1	40.8
Wilmot	370	301	90	28	29.9	9.3	24	0	8.0	.0	42	117	14.0	38.9
Total		3583	1235	306			149	23			448	1422		
Percent		100	34	09			04	01			12	40		

Source: 17th U. S. Decennial Census — 1950.

Table 11.

	All Land in Farms						Average Number Acres per Farm						Farm Values[1]			
	1920	1930	1935	1940	1945	Percent Change	1920	1930	1935	1940	1945	Percent Change	1935	1940	1945	Percent Change
Increasing Towns																
Chichester	12740	9868	11054	5337	9711	—24	115	152	106	103	101	—12	4246	3678	3956	— 6.8
Croyden	9656	8925	9250	7099	5810	—40	205	241	171	161	171	—16	4130	3999	2298	—44.4
Deering	12882	8525	13217	8058	8606	—33	146	144	136	144	121	—17	3343	3541	3258	— 2.5
East Kingston	4759	2675	4079	3051	3348	—30	67	96	95	56	86	28	5144	5013	4489	—12.7
Fremont	4870	3618	4621	4559	2695	—45	152	117	132	89	96	—37	4600	4745	4150	— 9.8
Hampton Falls	5693	5806	5283	3865	4382	—23	78	75	100	82	95	22	8180	7298	6761	—17.3
Lee	11634	7858	8144	8934	8364	—28	113	112	116	103	104	— 8	4098	3359	3820	— 6.6
Newington	3732	2238	3816	3434	4647	24	63	93	75	46	50	—21	6613	4850	3469	—47.5
South Hampton	7834	4101	3924	3348	3668	—53	174	71	78	66	75	—57	4735	4884	5120	8.1
Stark	4041	8056	7836	5509	5243	30	54	158	148	157	131	142	2956	3006	2414	—18.3
Average	7784	6167	7122	5319	5647	—27	116.7	125.9	115.7	100.7	103.0	—11.7	4805	4437	3974	—17.3
Decreasing Towns																
Columbia	16914	17649	14354	15064	14703	—13	174	232	189	201	267	53	4968	3990	4147	—16.5
Grafton	15467	14789	9039	5922	8732	—44	139	166	137	123	159	14	3042	2407	1982	—34.8
Hill	8359	4250	5457	5888	2791	—67	161	157	144	155	140	—13	2965	5718	2488	—16.1
Jackson	11069	9056	5953	6179	5820	—48	205	226	229	193	182	—11	10698	7250	8063	—24.6
Jefferson	17543	15494	15816	14572	15023	—14	108	150	161	117	171	58	4646	3992	3909	—15.9
Landaff	8298	5479	6847	5218	5240	—37	120	114	134	124	210	75	3835	4914	4274	11.4
Newcastle													5000			
Pittsburg	13869	12504	14889	12266	11522	—17	207	231	207	198	222	7	4075	4351	3992	— 2.0
Sandwich	28551	20777	18748	12130	10578	—63	134	153	151	144	104	—22	4296	4695	3182	—25.9
Wilmot	13048	13531	9565	7393	8581	—34	143	154	135	130	145	1	2568	2812	2914	13.5
Average	14794	12614	11185	9404	9213	—38	154.6	175.9	165.2	153.9	177.8	15	4609	4459	3883	—15.8

[1] Adjusted with General Wholesale Price Index, all commodities, 1926 = 100.

Source: New Hampshire Agricultural Census, 1935-1940-1945.

Table 12. Number of Farms 1920 to 1945

Towns	1920	1930	1935	1940	1945	Percent Change 1920 to 1945
Increasing Towns						
Chichester	111	65	104	52	96	— 4
Croyden	47	37	54	44	34	—28
Deering	88	59	97	56	71	—19
East Kingston	71	28	43	54	39	—45
Fremont	32	31	35	51	28	—12
Hampton Falls	73	77	53	47	46	—37
Lee	103	70	70	87	80	—22
Newington	59	24	51	74	92	56
South Hampton	45	58	50	51	49	9
Stark	75	51	53	35	40	—47
Average over-all decrease						—14.9
Decreasing Towns						
Columbia	97	76	76	75	55	—43
Grafton	111	89	66	48	55	—50
Hill	52	27	38	38	20	—62
Jackson	54	40	26	32	32	—41
Jefferson	163	103	98	125	88	—46
Landaff	69	48	51	42	25	—64
Newcastle						
Pittsburg	67	54	72	62	52	—22
Sandwich	213	136	124	84	102	—52
Wilmot	91	88	71	57	59	—35
Average over-all decrease						—41.5

Source: New Hampshire Agricultural Census, 1920. Machine Sheets Federal Farm Census, Bureau of Census, 1930, 1935, 1940, 1945.

tional trends for the number of farms to decrease generally, but apparently more than chance is at work to produce the concurrent series represented by the number of acres in farms and the number of farms. The New Hampshire resources are such as to support a given number of farms, but in some areas these farms must be larger than others if the enterprise is to be successful.

Farm Value

To check this further, the average value of all farm property in increasing and decreasing towns was compared. These could be secured only for the years 1935, 1940, and 1945. To make the data comparable, the dollars were standardized with the General Wholesale Price Index, all commodities, 1926 = 100. See Table 11.

The average value of farm property decreased regularly for both samples from 1935-1945, but the extent of the drop in value was greater in the decreasing towns. As a result, the average difference in value decreased between the two samples. In 1945, the average value of farm property in the sample of increasing towns was higher than that in the sample of decreasing towns. If the hypothesis of equilibrium has any validity, there may be further net out-migration from the decreasing towns. The values are so nearly alike that they may represent the closest approximation of equilibrium

Table 13.

	Average Acres per Farm			Average Farms per Town			Average Value All Farm Property per Town (Constant Dollars)			Average No. Chickens 4 Mos. and Older per Town			Average No. Cows and Heifers Milked per Town			Average No. Gallons Milk per Cow per Town		
	Inc.	Dec.	"t"	Inc.	Dec.	"t"	Inc.	Dec.	"t"	Inc.	Dec.	"t"	Inc.	Dec.	"t"	Inc.	Dec.	"t"
1920	116.7	154.6	1.85	70.4	101.9	1.66				2522.9	2427.2	.15	277.9	561.6	2.14	407.1	345.0	.76
1930	125.9	175.9	2.31	50.0	73.4	1.86				3082.6	1853.3	1.50	203.7	444.6	2.09	586.3	505.7	1.93
1935	115.7	165.2	3.29	61.0	69.1	.67	4803.6	5121.4	.42	3770.5	1825.9	1.93	204.5	425.3	2.11			
1940	100.7	153.9	3.03	55.1	62.6	.72	4437.3	4458.8	.04	4585.2	2273.8	1.68	187.9	340.3	1.75	594.8	507.6	2.17
1945	103.0	177.8	3.95	57.5	54.2	.28	3973.5	3883.4	.12	6858.4	3045.2	1.93	171.3	350.7	1.91			

Source: New Hampshire Agricultural Census, 1920. Federal Farm Census, Bureau of Census, 1930, 1935, 1940, 1945.

possible. If this is the case, then it is expected that the extent of out-migration will about equal the rate of the excess of births over deaths beyond replacement needs.

Whatever the case, the apparent interrelationships of these three variables, number of farms, size of farm, and value of farm property, tends toward some sort of equilibrium and this trend appears to be correlative with the phenomenon of migration.

Type of Farming

The two major agricultural enterprises in New Hampshire are poultry and dairy. One explanation of the variation in farm size between the sample of increasing and decreasing towns might be difference in specialization in these forms of agriculture. To examine the possibility, the number of chickens four months old and over on hand were compared for the years 1920, 1930, 1935, 1940, and 1945 between the sample of increasing and decreasing towns. See Table 14.

Table 14. Number and Percent Change Chickens Four Months Old and Over by Town 1920, 1930, 1935, 1940 and 1945

Towns	1920	1930	Percent Change 1920 to 1930	1935	Percent Change 1930 to 1935	1940	Percent Change 1935 to 1940	1945	Percent Change 1940 to 1945	Percent Change 1920 to 1945
Increasing Towns										
Chichester	4380	6396	+31	9295	+45	9631	+4	14349	+54	+204
Croyden	1406	1518	+8	1132	—25	1193	+6	816	—32	—42
Deering	1589	3654	+130	3218	—12	3375	+5	4243	+26	+167
East Kingston	1822	1483	—19	4019	+171	2097	—48	5935	+183	+226
Fremont	1116	5624	+404	6707	+19	9584	+43	14642	+53	+1212
Hampton Falls	6029	6703	+11	6797	+1	8714	+28	8809	+1	+46
Lee	3405	1906	—44	2678	+40	7781	+191	10742	+38	+215
Newington	1851	1095	—41	1353	+24	1244	—8	2844	+129	+54
South Hampton	954	1861	+95	2005	+8	1921	—4	5626	+193	+490
Stark	2177	586	—73	501	—14	307	—39	78	—74	—96
Decreasing Towns										
Columbia	2894	1687	—42	1708	+1	1553	—9	1421	—8	—51
Grafton	2814	2645	—6	3146	+19	5930	+88	8454	+43	+200
Hill	2305	1717	—26	2108	+23	2981	+41	1408	—53	—39
Jackson	1746	1343	—23	931	—31	802	—14	1019	+27	—42
Jefferson	3261	695	—79	1529	+120	1191	—22	1512	+27	—54
Landaff	1416	1311	—7	1019	—22	1538	+51	989	—36	—30
Newcastle				49						
Pittsburg	1078	1150	+7	1069	—7	1121	+5	1130	+8	+5
Sandwich	3652	3334	—9	3090	—7	2355	—24	6251	+165	+71
Wilmot	2679	2793	+4	1784	—36	2993	+68	5223	+74	+95

Source: New Hampshire Agricultural Census, 1920. Federal Farm Census, Bureau of Census, 1930, 1935, 1940, 1945.

While both samples show an increase in the number of chickens on hand, the rate of increase has been greater in the increasing towns and the differences in numbers between the samples has become progressively larger. This does not necessarily mean that the farms in the increasing towns are

predominantly poultry raising, but that there is more specialization in poultry on these farms than on the farms in the decreasing towns.

Next, the number of cows and heifers milked in each sample of towns was compared as an index to the relative importance of dairying in the two sets of towns for the years 1920, 1930, 1935, 1940, and 1945. The data are summarized in Table 15.

The average number of animals milked decreases regularly for both sets of towns, but the relative decrease is greater for the farms in the sample of decreasing towns and the difference in number of animals milked becomes less.

These data show that the tendency is toward more specialization in poultry in the increasing towns and in dairying in those towns that are decreasing. This specialization is undoubtedly linked to changing farm size and availability of land to farm.

The quality of the animals in one sample was compared with those in the other to see if out-migration had helped raise the quality of the farm enterprise and to check on the use of numbers as an index of specialization. To accomplish this, the average number of gallons of milk produced per cow and heifer milked was computed and the difference taken as an index of quality. Admittedly it is crude, since variation in herd types might make a difference, but there was no reason to believe that any one type of cow was concentrated in any particular area of the state. Table 15 summarizes the data.

The data presented here question to a degree the answers suggested by the data in the preceding table: that of a tendency toward dairy specialization in the decreasing towns. While the decreasing towns certainly have more cows, the production of those cows since 1920 has not been as high as those on farms in the increasing towns. Production per cow has improved, but not as rapidly as in the increasing towns.

The least that may be said is that it does not contradict the conclusions stated earlier that one method of economic adjustment in the decreasing towns has been to increase the size of the farm enterprise. It may be that the costs involved by such increase preclude the possibility of concurrent herd improvement, the quality of the resources available in the decreasing towns is not as good, or the price received for agricultural products in these towns forbids intensive use of agricultural resources.

Migration and Economic Adjustment

As was noted in the criteria for sample selection, most of the decreasing towns are located in the northern part of the State, while most of those increasing are located in the southern counties. The difference in distance from markets to the two sets of towns would influence the degree of intensity with which agricultural resources could be utilized. Those nearer the market would have to make more intensive use of resources than those at a distance because the greater price received for agricultural products in the areas nearer market tends to be capitalized in the land. This means that units at a distance would have to increase size of holdings and farm extensively rather than intensively. If this happened, then the value of farm property at the two distances should become more alike. This increase in size of unit becomes possible, if a number of producers leave the distant area permitting those remaining to expand.

At the same time, if others are moving into the area nearer market while production remains at about the same level, the number of acres

Table 15.

	Number of Cows and Heifers Milked						Milk Produced (Gallons) per Town				Average No. Gallons of Milk Produced per Cow per Town			
	1920	1930	1935	1940	1945	Percent Change	1920	1930	1940	Percent Change	1920	1930	1940	Percent Change
Increasing Towns														
Chichester	361	225	337	196	210	—41.8	98275	110197	107931	10	272.2	489.8	550.7	102.3
Croyden	233	170	204	109	118	—49.4	51500	89634	57737	12	221.0	527.3	530.0	139.8
Deering	360	183	180	159	146	—59.4	162851	119874	93446	—43	452.4	637.6	587.7	29.9
E. Kingston	261	145	125	161	147	—43.7	95962	103357	95857	—.1	367.7	712.8	595.4	61.9
Fremont	142	192	134	139	154	8.4	68302	106448	104968	54	481.0	554.4	755.2	57.0
Hampton Falls	375	273	261	232	197	—47.5	161996	175370	163048	.6	432.0	642.4	578.2	33.8
Lee	409	244	250	308	273	—33.2	213527	133834	166696	—22	522.1	548.5	541.2	3.6
Newington	203	231	268	281	259	27.6	125824	162032	198506	58	619.8	701.4	706.4	14.0
S. Hampton	156	200	107	107	82	—47.4	89569	124125	63884	—29	574.8	622.1	597.0	3.9
Stark	279	169	179	137	127	—54.5	35729	72075	69326	94	128.1	426.5	506.0	295.0
Average	278	204	204	188	171	—38.5	110364	119725	112140	1.6	407.1	586.3	594.8	46.1
Decreasing Towns														
Columbia	931	905	861	688	748	—23.8	[1]	541669	403060			597.9	585.5	
Grafton	409	177	225	191	165	—59.6	112993	89862	71885	—36	276.3	507.7	376.4	36.2
Hill	137	91	111	82	59	—56.9	41507	50897	47443	14	303.0	559.3	578.6	91.0
Jackson	256	168	150	139	101	—60.5	65251	84865	57254	—12	254.9	505.1	412.0	61.6
Jefferson	1431	1114	982	804	761	—46.8	759905	656521	433240	—43	531.0	589.3	538.9	1.5
Landaff	504	420	394	399	503	— .2	159160	138160	257132	62	315.8	448.0	644.4	104.0
Newcastle														
Pittsburg	651	626	634	471	569	—12.6	279654	339964	299681	7	429.6	543.1	636.3	48.1
Sandwich	383	328	303	154	135	—64.8	128936	99957	70546	—45	336.8	304.7	458.1	36.0
Wilmot	302	171	168	135	115	—61.9	94460	84852	45584	—52	312.8	496.2	337.7	8.0
Average	562	444	425	340	351	—37.5	205239	227938	187314	—8.7	345.0	505.7	507.6	47.1

[1] Columbia 1920 figures not available.

Source: New Hampshire Agricultural Census, 1920. Federal Farm Census, Bureau of Census, 1930, 1935, 1940, 1945.

suitable for agriculture may be under some pressure leading to a limitation of farm size. This should increase the differences in farm size between the two areas. Since the production is assumed to be about steady, the division of income from this production must be split among more producers, decreasing the value of farm property in the increasing towns.

All of the foregoing hinges on the movement of people out of the more distant and into the nearer area. From the selection of the sample, the towns are those showing greatest net gain or loss within their population class. If these towns are compared with the general area in which they are located, the trends should show more rapid adjustment of the towns than of the surrounding area.

To test this, the three northernmost counties, Coos, Grafton, and Carroll, and the three southernmost counties, Cheshire, Hillsborough, and Rockingham, were tested for average acres per farm, average value of all farm property, average number of cows and heifers milked, and average number of gallons of milk per cow.

The same years of record as used in the sample of towns were employed and the trends of the northern counties compared with the trends of the decreasing towns; those of the southern counties with the trends of the increasing towns. The data are summarized in Table 16.

The data support the contention that migration hastens economic adjustment when identical resource items are compared. The inverse may also be true, that economic adjustment hastens migration.

Production in the northern counties has increased, but in the decreasing towns it has increased more. In the southern counties, production has increased about the same as in the increasing towns. The decrease in cow numbers has been virtually constant for all areas which, taken with the preceding data, indicates that the level of production has not been greatly modified in the areas.

As would be expected under these conditions, farm size has increased in the sample of decreasing towns though it has decreased in the northern counties. Decrease in farm size in the sample of increasing towns has not been as rapid as might be expected. This may be due to the attraction of migrants to towns having better agricultural resources than other towns in the southern counties. The value of all farm property has at the same time become more alike in the sample of towns than in the two sets of counties. It appears then that migration is acting as a device leading to extensive farming in those areas more distant from the markets and more intensive farming in areas nearer the market.

Level of Living

The next question was the effect of out-migration on level of living in these two sets of towns. The usual level of living index which had been developed for use in county analysis could not be utilized. Relatively little data were available from secondary sources and the major attempt to answer this will have to come from analysis of schedules to be used in a forthcoming study of the effect of out-migration on the informal social structure of these towns.

There were a number of indices available for one year, but only three which were reported in two censuses and which had any validity. Motor cars were reported, but the numbers were so similar that comparison would have been meaningless. However, possession of electric power, telephones,

Table 16.

	Average Acres per Farm				Average Value All Farm Property				Average No. Cows and Heifers Milked				Average No. Gallons Milk per Cow			
	County		Town		County		Town		County		Town		County		Town	
	No.	So.	Inc.	Dec.	No.	So.	Inc.	Dec.	No.	So.	Inc.	Dec.	No.	So.	Inc.	Dec.
					(Constant Dollars)											
1920	154	112	117	155					12,068	10,551	278	562	426	436	407	345
1930	164	115	126	176					9,660	7,393	204	444	533	605	586	506
1935	147	99	116	165	4424	4672	4804	5121	10,165	7,979	204	425				
1940	148	87	101	154	4541	4837	4437	4459	8,350	7,539	188	340	541	618	595	508
1945	144	89	103	178	3931	4380	3974	3883	7,790	7,235	171	351				
Percent Change	—6	—21	—12	+15	—11	—6	—17	—24	—35	—31	—38	—38	+26	+42	+46	+47

Source: New Hampshire Agricultural Census, 1920. Federal Farm Census, Bureau of Census, 1930, 1935, 1940, 1945.

and tractors were available for the years 1940 and 1945. Obviously there can be no conclusions drawn from such a short series, but they do support the data presented and hence perhaps gain in value.

Table 17. Level of Living Items (Average Percent of Farms Reporting)

Facilities	Increasing Towns 1940	Increasing Towns 1945	Decreasing Towns 1940	Decreasing Towns 1945	"t" 1940	"t" 1945
Electricity	72.6	79.8	44.5	65.7	2.98	1.52
Telephones	52.6	59.8	40.1	52.2	1.29	.72
Tractors	13.7	4.7	23.7	11.7	3.38	1.93

In all of these it may be seen that the differences between the increasing and decreasing towns decrease during this very short period of time. Noting again the deficiency of the data, nevertheless apparently these support the conclusions of an earlier paragraph; that out-migration is a form of economic adjustment and the level of living for those remaining ought to rise more rapidly than that of towns receiving migrants.

Table 18. Number and Percent of Farms Reporting Specified Utilities in Increasing and Decreasing Towns, New Hampshire, 1940 and 1945

Towns	1940 Electricity No.	1940 Electricity Pct.	1940 Telephones No.	1940 Telephones Pct.	1945 Electricity No.	1945 Electricity Pct.	1945 Telephones No.	1945 Telephones Pct.
Increasing Towns								
Chichester	49	94	35	67	87	91	66	69
Croyden	17	39	25	57	20	59	20	59
Deering	39	70	17	30	54	76	21	30
E. Kingston	48	89	35	65	35	90	24	62
Fremont	42	82	27	53	23	82	15	54
Hampton Falls	43	91	33	70	41	89	36	78
Lee	39	45	41	47	64	80	50	62
Newington	64	86	55	74	86	93	78	85
S. Hampton	43	84	25	49	42	86	35	71
Stark	16	46	5	14	21	52	11	28
Average		73		53		80		60
Decreasing Towns								
Columbia	16	21	39	52	42	76	44	80
Grafton	22	46	5	10	35	64	11	20
Hill	21	55	15	39	10	50	8	40
Jackson	20	62	20	62	23	72	24	75
Jefferson	94	75	49	39	77	88	49	56
Landaff	18	43	21	50	20	80	15	60
Newcastle								
Pittsburg	30	48	39	63	37	71	39	75
Sandwich	39	46	50	60	90	88	84	82
Wilmot	28	49	15	26	40	68	20	34
Average		49		45		73		58

Source: Federal Farm Census, Bureau of Census, 1940, 1945.

Table 19. Number and Percent of Farms Reporting Trucks, Tractors, and Autos in Increasing and Decreasing Towns, New Hampshire, 1940 and 1945

Towns	1940						1945					
	Trucks		Tractors		Autos		Trucks		Tractors		Autos	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Increasing Towns												
Chichester	24	46	14	27	46	88	43	45	42	44	80	83
Croyden	12	27	3	7	34	77	15	44	4	12	23	68
Deering	10	18	9	16	48	86	31	44	19	27	62	87
E. Kingston	21	39	19	35	49	91	22	56	18	46	31	79
Fremont	14	27	9	18	49	96	19	68	8	29	24	86
Hampton Falls	31	66	26	55	45	96	39	85	35	76	40	87
Lee	24	28	15	17	67	77	37	46	32	40	61	76
Newington	35	47	21	28	51	69	29	32	32	35	90	98
S. Hampton	15	29	19	37	41	80	27	55	32	65	40	82
Stark	16	46	2	6	21	60	12	30	15	38	36	90
Average		37		25		82		51		41		84
Decreasing Towns												
Columbia	31	41	2	3	53	71	36	65	19	34	46	84
Grafton	15	31	9	19	39	81	17	31	8	14	40	73
Hill	14	37	4	10	30	79	9	45	1	5	9	45
Jackson	25	78	4	12	29	91	15	47	5	16	30	94
Jefferson	24	19	10	8	94	75	33	38	26	30	70	80
Landaff	12	29	5	12	42	100	17	68	9	36	21	84
Newcastle												
Pittsburg	22	35	4	6	57	92	20	38	10	19	51	98
Sandwich	29	34	4	5	69	82	34	33	24	24	90	88
Wilmot	14	25	5	9	48	84	18	31	10	17	45	76
Average		37		9		84		44		22		80

Source: Federal Farm Census, Bureau of Census, 1940, 1945.

Employment Conditions

It was possible to secure the statistic "Days Work Off Farm" for the years 1935 and 1940. Just as in the preceding case, the data are not conclusive because of such a short series, but are presented because of their indicative character.

Table 20. Average Days Work Off Farm

Year	Increasing Towns	Decreasing Towns	"t"
1935	76.3	60.4	1.55
1940	89.5	74.7	.97

The trend is similar to that in most of the other data noticed; that is, the difference between the sample of increasing towns and that of decreasing towns becomes smaller.

Most of the decreasing towns are located in the northern half of the state, and while work in the woods is available, in general the opportunities for extra work off the farm are not as prevalent as in the southern half of the state where the increasing towns are located.

It is suggested that perhaps the reason for the smaller size farm in the increasing towns may be due to this factor of working elsewhere part-time. It may also be accounted for, in part, by the increased amount of poultry raising in the increasing towns. It may be possible to have a "larger" and more economic farm on fewer acres raising birds and working part-time off the farm than would be otherwise possible on New Hampshire soil.

It indicates also a condition mentioned earlier, that the census residence categories are of less value for research purposes in New England than elsewhere because of the fact that they are not mutually exclusive. The rural population in New England, perhaps, should not be classified as rural farm or rural non-farm when on the average one-quarter of their time is spent in non-farm occupations.

Summary

In this analysis of population change in two samples of small towns which had increased or decreased regularly since 1920, it was developed that:

1. *Population characteristics have become more alike during the period 1930-1950.* When the population distributions by age and sex are compared the trend is consistently in the direction of greater homogeneity. Fertility ratios, dependency ratios, and population density also tend to become more alike in value.

2. *Census residence categories are of relatively little value in the analysis of the small northern New England town.* In some areas of the United States there is a notable relationship between census residence categories and minor civil divisions. This is not true in northern New England where the pattern of settlement more closely resembles the farm village than in other parts of the country. Individuals in the different census residence categories vary in their characteristics, but the direction of the variation is not consistently one way. The farm and non-farm components within each sample of towns have different rates of reproduction. In the sample of increasing towns, the farm component has higher fertility rates; in the other, the reverse is true. When the sex ratio for residence components within each sample was measured, it was higher for the farm than non-farm in the increasing towns and the reverse in the decreasing towns. Apparently population change in the town affects the value of the ratios.

These two census residence categories are largely intermixed in the New England town, not separated spatially as in some other areas of the country. Hence generalizations derived from the behavior of these residence categories may be misleading, if applied to rural New England towns since the variation is complementary.

3. *There are some differences in agricultural adjustments between farms in towns losing population and those in towns gaining population.* The value of farms measured in constant dollars has decreased about the same amount in both samples of towns. The average number of acres per farm has gone up in the sample of decreasing towns and has gone down in the sample of increasing towns. Herd size has increased in the sample of decreasing towns while the reverse is true in the increasing towns. Production per cow has increased in both samples, but more rapidly in the increasing towns. It was found that these trends differed sufficiently from the corresponding county trends to ascribe them in part to some factor (perhaps population change and quality of resources) other than distance from market.

4. *There appears to be some general difference in the economic orientation of the decreasing and increasing towns.* The decreasing towns have almost twice as many retail establishments handling non-staple items as do the increasing towns. The former also have more personal services available and more establishments which can be classified as recreation. The inference from this is that they are catering to the recreation industry since all are too small to be the shopping centers in their areas. The in-

creasing towns have a substantially larger proportion of establishments handling agricultural products. The number of manufacturing establishments is virtually constant in the increasing towns from 1921-1950, while in the decreasing towns the number of these fluctuates widely. The inference which may be drawn from this is orientation toward stable small processing plants, both agricultural and non-agricultural, in the increasing towns.

5. *In small towns in areas of long and stable settlement, differences in economic orientation and adjustment do not create difference in population characteristics.* This statement runs counter to some generalizations held regarding population composition. It is known that in cities economic factors play an important role in affecting population characteristics. This apparently does not hold for small towns in which resources are insufficient to attract a large volume of migration.